

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAMES C. SMITH and DARWIN A. BECKER

Appeal No. 97-1149
Application No. 08/237,537¹

ON BRIEF

Before ABRAMS, STAAB and CRAWFORD, *Administrative Patent Judges*.
ABRAMS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the decision of the examiner finally rejecting claims 1-8, which constitute all of the claims of record in the application.

The appellants' invention is directed to a method (claims 1-4) and an apparatus (claims 5-8) of determining a desired pressure across fuel injectors of an internal combustion engine.

¹Application for patent filed May 3, 1994.

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The subject matter before us on appeal is illustrated by reference to claim 1, which has been reproduced in an appendix to the appellants' Brief on Appeal.

THE REFERENCE

The reference relied upon by the examiner to support the final rejection is:

Betki <i>et al.</i> (Betki)	5,237,975	Aug. 24, 1993
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THE REJECTION

Claims 1-8 stand rejected under 35 U.S.C. § 103 as being unpatentable over Betki.

The statement of the rejection is found in Paper No. 3 (the first office action), while the explanation of the rejection is found in the Paper No. 15 (the Examiner's Answer).

The opposing viewpoints of the appellants are set forth in the Brief and the Reply Brief.

OPINION

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness (see *In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d

1955, 1956 (Fed. Cir. 1993)), which is established when the teachings of the prior art itself would appear to have suggested the claimed subject matter to one of ordinary skill in the art (see *In re Bell*, 991 F.2d 781, 783, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993)). If the examiner fails to establish a *prima facie* case, the rejection is improper and will be overturned. See *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

The objective of the appellants' invention is to provide improved accuracy in metering the fuel to internal combustion engines of the type which utilize fuel injectors supplied from a fuel rail. As manifested in independent method claim 1, the invention comprises the steps of

determining a first fuel injection pressure required to keep fuel in the fuel rail liquid;

determining a second fuel injection pressure to keep the fuel injectors operating in a low-sensitivity region of their fuel flow curve; and

selecting the larger of the first and second fuel injection pressures as the desired fuel injection pressure to be maintained so as to provide liquid fuel at a minimum absolute fuel injection pressure.

By way of understanding the substance of the claim language, the appellants point out that problems arise if the fuel is not kept at such pressure in the fuel rail as to maintain it in the liquid

state (specification, page 4), and that the "low-sensitivity region" of the fuel injectors is a portion of the operating range where the fuel injector fuel flow is relatively insensitive to small variations in the length of the opening of the injectors. Injector fuel flow sensitivity is a function of the time the injector is kept open, the pressure across the injector, the temperature of the fuel and the injectors, the fuel viscosity, and other factors. Specification, pages 4 and 5.

Our understanding of the examiner's position is that all of the steps recited in claim 1 inherently are accomplished by the system disclosed by Betki. However, we do not agree with the reasoning that he has set forth to substantiate that position. Nowhere in the Betki reference is there any discussion of the operating ranges of the injectors, much less use of the phrase "low sensitivity region," nor is there a disclosure of the factors which the appellants have listed as being related to this factor. Thus, even if we accede, *arguendo*, to the examiner's position that Betki selects one or the other of two pressure levels at which to operate the system, there is no evidence which supports the conclusion that one of these pressure levels is related to the required "low sensitivity region." We also remain unconvinced that Betki's determination of the pressure

differential across the injectors encompasses the appellants' step of "determining" the fuel injection pressure which will maintain the fuel in the liquid state, especially when considering that Betki establishes that this must be maintained at a minimum value of 40psi (column 3, lines 2 and 3, and 55-58). No such limit is set forth in the appellants' disclosure or claims, and they argue that they do not wish to be constrained by such, for situations can arise in which the pressure need not be as high as 40psi (Brief, pages 5-7).

It therefore is our view that the teachings of Betki fail to establish a *prima facie* case of obviousness with regard to the subject matter of independent claim 1, and we will not sustain the rejection.

Independent apparatus claim 5 contains the same limitations, and therefore the rejection on the basis of Betki suffers from the same problems, and will not be sustained.

It follows that the rejection of dependent claims 2-4 and 6-8 also will not be sustained.

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The decision of the examiner is reversed.

REVERSED

NEAL E. ABRAMS)	
Administrative Patent Judge))	
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)	
LAWRENCE J. STAAB)	BOARD OF PATENT
Administrative Patent Judge))	APPEALS AND
)	INTERFERENCES
)	
MURRIEL E. CRAWFORD)	
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